

Remarks

Claims 1 to 5, 7 to 18, 20 to 28, and 31 to 33 are pending in this application, and all have been rejected for the reasons discussed below.

The Present Invention

The present invention is directed to improved dairy animal milking processes and devices. The invention improves the milking process by gently milking an animal within acceptable milking time. Milking dairy animals is performed by alternating vacuum and ventilation on a teat cup and liner combination. The rate at which vacuum and evacuation are applied affects milking times and animal comfort during milking.

"The invention is based on the general reflection that the curve, in particular the time curve of the evacuation phase and/or the ventilation phase is adjusted by means of two pressure changing rates. This option allows the adjustment of pressure drop and rise in the pulse chamber to be fast on the one hand while on the other hand being slow and gentle so as to allow a gentle but nonetheless fast milking operation," Spec. at page 4, paragraph 19, lines 18 to 22. This invention is not disclosed, taught, suggested or motivated by the art of record.

Amendments

Claims 1 and 18 are amended to recite that the duration of one pressure changing phase having two pressure changing speed rates, as opposed to "with at least" two pressure changing speed rates.

Claim 9 is amended in line 3 to replace "the" with - - a - - to traverse the antecedent basis rejection discussed below.

Claim 13 is amended to replace "changing" with - - adjusting - - to traverse the §112 rejection discussed in detail below.

Claim 24 is amended to delete “discontinuously” in response to the §112 rejection discussed in detail below.

Drawings

The drawings were objected to under 37 C.F.R. §1.83(a). The drawings must show every feature of the invention specified in the claims, and the examiner stated that “the discontinuity in the pressure curve must be shown or the feature(s) canceled from the claim(s).” The examiner did not specify which claims are related to this objection, but for purposes of this response, Applicants assume the examiner is referring to claim 24 because it included the word “discontinuously,” and there is a §112 rejection that relates to that term. No amendments to the drawings are necessary because the word is deleted from claim 24.

Rejection Under 35 U.S.C. §112, First Paragraph

Claims 1 to 5, 7 to 18, 20 to 28, and 31 to 33 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement because the examiner believes that the specification fails to reasonably convey to one of ordinary skill the use of a pressure change duration with changing rates that is substantially the same as a duration with no such changes.

Disclosure of Invention’s Pressure Change Durations

Applicants respectfully disagree and note that pressure change durations of the invention as compared to prior art pressure change durations are illustrated in the original specification. Fig. 2 illustrates this very comparison and is described in paragraph 88 below:

[0088] The illustration in Fig. 2 is a schematic illustration. In reality the curves are more rounded than the lines 61, 62 and 63, 64, as is shown at line 65 for a conventional system. Moreover, this schematic illustration does not show the

minor pressure difference employed to prevent a premature contact or a premature lift-off of the liner with or from the teat.

(Emphasis added.)

Thus, the comparison is disclosed and satisfies 35 U.S.C. §112, paragraph 1. In addition, the specification states, "The time period which a pressure changing phase requires, is *insignificantly longer* than in the prior art. Given a correspondingly higher ventilation rate after the liner is placed snug on the teat, which rate will then be harmless, the time period may *have the same length*." (Spec. at page 4, paragraph 19, lines 22 to 23, emphasis added.) Another example states, "... *pressure changing phase [is] controlled in at least two speeds*" (Spec. at page 3, paragraph 10, emphasis added).

It may be helpful to consider the definitions of "*Pressure changing phase*," which is the evacuation phase and/or also the ventilation phase in a pulsator cycle, spec. at page 3, paragraph 11 and "*pressure curve*," which is the rate of a pressure change over time. A faster pressure change will generate a steeper pressure curve than a slower pressure change at a flatter pressure curve, spec. at page 3, paragraph 12, lines 23 to 24. Other examples from the disclosure state that "also ... two (or more) different speed rates," spec. at page 3, paragraph 13, line 27; "that the change in speed rate from a first to a second rate is caused by active control measures," spec. at page 3, paragraph 14, lines 29 to 30; and "the ventilation phase can be subdivided in two stages. The pressure in the first stage can then be built up at a lower rate than in the second stage," spec. at page 4, paragraph 16, lines 4 to 5.

Detailed explanations of the pressure changing phase are also provided. For example, "More than two time stages and/or more than two pressure change speeds may be provided, for example three each. Then the pressure may initially change faster for example until the infold

pressure of the liner is reached, then slower until the liner has gently closed or opened, and then it closes and opens faster again," Spec. at page 5, paragraph 24, lines 21 to 24.

An explanation of how the pressure change phase is adjusted by the invention states, "Preferably the pressure curve is controlled in a first stage and in a subsequent stage of the ventilation phase such that the pressure curve will be flatter in the first stage than in the subsequent stage and particularly preferably substantially flatter," Spec. at page 6, paragraph 26, lines 1 to 3.

Also, disclosed is that "The line 61 is a flat curve where liner movement slows down due to a lesser ventilation of the milking gap (pulse chamber)," Spec. at page 15, paragraph 86, lines 13 to 14 in conjunction with Fig. 2 also explains the distinction.

Another example states, "The evacuation phase will initially be slow such that initially the curve will be flat according to line 63 and thereafter as the infold pressure P_{E2} is obtained, evacuation continues at a faster pace such that after the liner lifts off the curve will be steep," Spec. at page 15, paragraph 87, lines 18 to 20 in conjunction with Fig. 2.

Thus, the comparative feature of the invention compared to known systems is disclosed throughout the specification, and Applicants respectfully submit that 35 U.S.C. §112, first paragraph is satisfied.

Rejection Under 35 U.S.C. §112, First Paragraph

The examiner asserts that the original disclosure does not "discuss a pulsator actuator, nor controlling the actuator based on measurement signals." Applicants respectfully disagree and cite to the following.

Pulsator Actuator Disclosure

The specification states, "The pulsed vacuum is preferably adjusted through a pulsator wherein the pressure curve during the pressure changing phase(s) is preferably controlled by means of an adjusting unit. The adjusting unit may be controlled for example electrically or mechanically and it is capable of changing a mechanical variable such as a flow cross-section." (Spec. at page 4, paragraph 17, lines 7 to 11.) An adjusting unit can be an actuator.

Another disclosure of adjusting the pulsator states, "Preferably the time curve of at least one pressure changing phase is adjusted in dependence on a valve characteristic of a pulsator valve. To this end for example a first portion of the flow cross-section in the pulsator valve is initially opened and another portion at a later time." (Spec. at page 8, paragraph 39, lines 11 to 13.) There is no specific mention of an "actuator" here, but in context with the rest of the disclosure, it is the only possibility for performing such a function.

As a disclosure of controlling the actuator based on measurement signals, the specification at paragraphs 48 and 63 states,

[0048] The pressure is preferably measured in the pulse chamber and preferably forms an input signal of a component supplying an output signal through which the pulsator and/or a flow resistor is actuated.

[0063] The valve of the device allows to adjust the time curve of the evacuation phase and/or the ventilation phase in dependence on a valve characteristic of the valve. The valve may for example be a directly actuated sliding seat valve or else a pilot valve of a pulsator being specifically guided on a valve characteristic. The pulsator main valve is actuated by the pilot valve. The main valve traces the pilot valve in analogy, transmitting pressures to the pulsation line corresponding to its valve characteristics. The valve characteristics of the pilot valve may include the valve characteristics of the main valve so as to achieve the desired phase curves.

Another relevant disclosure related to the signals states, "... to adjust the time curve of the evacuation phase and/or the ventilation phase in dependence on a valve characteristic of a valve of the pulsator. The valve characteristic may take into consideration different influential factors which influence the opening and closing of the valve. The valve characteristic in particular takes into consideration counteracting forces which due to friction, weight, spring forces or other resilient forces or the like, affect the valve response." (Spec. at page 8, paragraph 41, lines 21 to 27.) The word "signals" is not used, but there is no other way to perform this function without the use of signals. See also detailed paragraph "valve characteristic" in Spec. paragraphs 38, 41, 56, 63, and 95. See paragraph "pressure measuring unit" in Spec. at page 13, paragraph 65, and "The device 8 allows to adjust at least the time curve of the evacuation phase and/or the ventilation phase." (Spec. at page 14, paragraph 83, lines 27 to 28 in conjunction with Fig. 1)).

Regarding a disclosure of a pulsator, one "pulsator" embodiment is discussed in detail from page 18, line 19 in conjunction with the Figs. 3 and 4, and is respectfully submitted to be a sufficient disclosure of the pulsator. See in particular: "The valve body 11 is preferably brought *into a specified floating position...*" (Spec. at page 16, paragraph 95, line 25, emphasis added).

Thus, the specification satisfies 35 U.S.C. §112, first paragraph.

Rejection Under 35 U.S.C. §112, Second Paragraph Rejection

Claims 1 to 5, 7 to 17 and 24 were also rejected under 35 U.S.C. §112, second paragraph, as being indefinite for not disclosing a use of pressure change duration having speed rate changes that do not exceed a duration having no speed rate changes. The examiner further indicated that the original disclosure did not discuss a pulsator actuator nor controlling the actuator based on measurement signals.

Claims 1 to 5, 7 to 17, and 24 were rejected under 35 U.S.C. §112, second paragraph for using language the examiner asserts is ambiguous. The term “substantially” in claim 1 is objected to as indefinite; claim 9 recites “the liner” instead of - - a liner - -; claim 13 is unclear as to whether it is a process of use or assembly; and claim 24 is ambiguous for using “discontinuous.”

“Substantially” is Reasonably Definite – Claim 1

“Substantially” is reasonably definite to a person skilled in the art because the specification at paragraph 88 states,

[0088] The illustration in Fig. 2 is a schematic illustration. In reality the curves are more rounded than the lines 61, 62 and 63, 64, as is shown at line 65 for a conventional system. Moreover, this schematic illustration does not show the minor pressure difference employed to prevent a premature contact or a premature lift-off of the liner with or from the teat.

(Emphasis added.)

Also, by way of Fig. 2 and the quotes above that explain that within one pulsation cycle (i.e. one pass through the pulse phases (a) through (d)), one provides the longest possible teat liner opening phases such that specific care must be taken for the phase (b) to be long and even and moreover for the ratio of the phases (b) to (d) to remain even.

Further, pulsation can vary slightly depending on equipment, hose lengths, atmospheric conditions, animal physiology, and other factors. Thus, “substantially” addresses minor variations resulting from such factors, and is well supported by the specification and the common knowledge of one skilled in the art.

The Liner – Claim 9

The antecedent basis rejection is traversed by this amendment because the definite article “the” is replaced by the indefinite article “a.”

Changing Valve Cross-Sections – Claim 13

Claim 13 is amended to replace “changing” with - - adjusting - - . This reflects the process of adjusting the chamber cross-section with the valve body 11, for example. Paragraphs 97 and 106 of the specification explain this process in general terms.

“Discontinuous” in Claim 24

Claim 24 is amended to delete the word “discontinuously.”

All §112 Rejections are Traversed

Applicants respectfully submit that all of the rejections under 35 U.S.C. §112, first and second paragraph are traversed by amendment or the above citations to the specification support the claims.

Rejection Under 35 U.S.C. §102

Claims 1 to 5, 7 to 12, 14, 17, 18, 21 to 23, 26, 28, and 31 to 33 were rejected under 35 U.S.C. §102(b) as being anticipated by *Grimm et al.*, U.S. Patent No. 5,970,910. Claims 1, 12, 13, 18, 20, and 23 to 25 were rejected under 35 U.S.C. §102(b) as being anticipated by *Innings, et al.*, U.S. Patent No. 6,009,832.

To maintain a rejection under 35 U.S.C. §102(b), all of the elements of each claim must be disclosed in a single reference. The test for anticipation requires a strict, not substantial, identify of corresponding claim elements. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334-35, 2008 U.S. Appl. LEXIS 8404, 27-28 (Fed. Cir. 2008). Applicants respectfully submit

that this burden has not been met in the action with respect to claims 1 or 18, and thus it was not met in the rejection of the dependent claims.

Rejection Under 35 U.S.C. §103

Claims 15 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimm* in view of *Kaneko*, U.S. Patent No. 5,897,304. Claim 27 was also rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimm* in view of *Krone*, U.S. Patent No. 5,628,491. Applicants respectfully submit that key features of the claims are not disclosed by the cited art, and thus no *prima facie* case of obviousness has been made.

Grimm et al.

Grimm et al. discloses a method of milking an animal with a vacuum cycle as illustrated by broken lines 19 and 20 in Fig. 9 and line 24 in Fig. 10. As seen in these pressure curves, the application of “low efficiency” pressure to slow down liner movement during pulsation results in a longer pulsing cycle. While this may result in a gentler milking pulsation, the duration of the pulse cycle will be longer. There is no disclosure in *Grimm et al.* of a pulsation cycle represented with a pulsation curve that is substantially flatter yet cycles at a normal rate.

Thus, *Grimm et al.* discloses a modified pressure change phase for a milking cycle, but as is seen in Figs. 9 and 10 of *Grimm et al.*, the pressure changing phase is significantly longer and will result in longer milking times to achieve a desired result. Applicants are aware of no disclosure in *Grimm et al.* that recognizes problems associated with extended milking times and there is no disclosure of any method or device that accomplishes a modified milking pressure changing phase that reduces stress on an animal while maintaining standard pressure changing phase durations.

This is not a minor or obvious detail in a modified milking process. Indeed, extending milking times in a commercial dairy results in reduced efficiency and fewer animals milked in any given parlor size. Even in view of these constraints, *Grimm et al.* fails to disclose, or suggest, teach or motivate one skilled in the art to use pressure phase changing methods or apparatus to reduce animal stress *without* extending milking times, as recited in independent claims 1 and 18.

In the present invention, pressure phases and/or evacuation phases that are within the overall pulsation cycle are varied to achieve improved milking without extending milking times. To accomplish this objective, a valve operation in accordance with the present invention is provided in valve 9, or valves 20 and 21, for example.

Allowability over *Grimm et al.*

Given that *Grimm et al.* fails to disclose a key element of amended independent claims 1 and 18, the anticipation rejections are not appropriate. First, it may be helpful to address the examiner's response to arguments filed April 30, 2009.

The examiner states at page 13 of the Action that,

"In response to applicant's arguments that *Grimm et al.* does not teach a milking method "without substantially increasing milking time" (starting page 16, para 1), *Grimm* anticipates the steps of the method as outlined by the claims. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951)."

Applicants respectfully note that the phrase "without substantially increasing the milking time" is actually reflected in the first element of claims 1 and 18, which states, "defining a standard pressure changing phase duration in which no changes to pressure changing speed rates are made...." Thus, comparison with a portion of the milking times in the form of a pressure

changing phase is an element of the independent claims defining a standard phase which is a portion of the overall time needed for milking.

Next, the examiner states, "In response to applicant's argument that the Grimm fail to show certain features of applicant's invention (page 16, para 1), it is noted that the features upon which applicant relies i.e., animal comfort) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993)." Applicants respectfully disagree with the examiner's suggestion that animal comfort should be recited in the claims. Reciting a functional result in patent claims directed to an apparatus is typically not effective because the claim must be distinguished in terms of structure, not function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ 2d 1429, 1431-32 (Fed. Cir. 1997). Thus, Applicants' remarks describing the benefit of the device are not necessary to include in the claims.

Further, the obviousness rejections under 35 U.S.C. §103(a) fail to meet a *prima facie* standard. There is no teaching, motivation or suggestion in *Grimm et al.* to modify a milking process to improve animal comfort and yet maintain standard milking times or durations. This is true regardless of whether *Grimm et al.* is taken alone or in combination with *Kaneko* or *Krone*. Thus, claims 15, 16, 27, 31, and 32 would not have been obvious to one of ordinary skill in the art.

Innings et al.

Innings et al. is understood to *monitor* not *control* the pressure changing phase in a pulse chamber. Figs. 2 and 3 do not illustrate controlled changes in a pressure curve. Rather, they

illustrate pressure curve changes that naturally occur when a liner contacts or releases from an animal.

The only controlling of the pressure changing phases does not occur during the phase itself. Rather the controlling is done in subsequent phases as a function of actual milk flow. This is not a disclosure of varying pressure changing phases with two changes in pressure changing speed rates as recited in independent claims 1 and 18. This is clear where *Innings et al.* states:

The object of the present invention is to overcome the disadvantages mentioned above and to provide an improved way of controlling the milking process *in response to the actual milk flow*.

Controlling the *milking intensity* may comprise controlling one or more of milking parameters, such as the milking vacuum level, the maximum pulsating vacuum level, the pulsator ratio, the pulsating frequency, etc. E.g. a reduction of the milking vacuum level, the maximum pulsating vacuum level or the pulsator ratio, or by increasing the pulsating frequency.

(Emphasis added.)

None of these options disclosed by *Innings et al.* is a disclosure of controlling pressure change rates in a single pressure change phase or changing the pressure change rates and still be within the duration of a standard pressure change phase.

Allowability over *Innings et al.*

In view of the above, *Innings et al.* fails to disclose a method as recited in any of the amended claims. Thus, Applicants respectfully submit that the amended claims are not anticipated by *Innings et al.* Again, it may be helpful to begin with a reply to the examiner's response to arguments filed April 30, 2009.

The examiner states at pages 13 and 14 of the Action that,

"In response to applicant's argument that *Innings* does not control a pressure curve (page 17, para 2), the invention is directed to "Methods of controlling the milking of an animal" (see title). Figs 2 and 3 show the pressure curves during

Applicant: Kaeffer et al.
Application No.: 10/559,159

different flow conditions. The controller controls the process of milking, which produces these graphs, and thus controls the curves.”

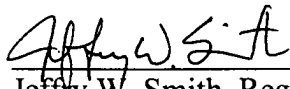
With respect, Applicants note that controlling curves in general is not the same as controlling the pulsation rates and changing those rates during milking. Thus, Applicants respectfully request that the examiner cite to the disclosure of *Innings et al.* that corresponds to *each element* of the claims.

Applicants respectfully submit that pursuant to 35 U.S.C. §112 paragraph 4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Applicants respectfully request the withdrawal of all claim rejections and prompt allowance of the claims.

Conclusion

For the foregoing reasons, the amended claims are allowable and Applicants respectfully request this case be passed to issue.

Respectfully submitted,



Jeffrey W. Smith, Reg. No. 33455
Attorney for Applicant
SMITH LAW OFFICE
8000 Excelsior Drive, Suite 301
Madison, WI 53717
(608) 824-8300